

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-24 are presently active in this case.

In the outstanding Office Action, Claims 1, 7, 9 and 15 were provisionally rejected under the judicially created doctrine of equivalents of obviousness-type double patenting as unpatentable over Claims 4 and 8 of co-pending Application No. 09/645,511, Claims 1, 3-10 and 12-24 were rejected under 35 U.S.C. §102(b) as anticipated by Herman et al. (U.S. Patent No. 6,075,905, herein “Herman”), and Claims 2 and 11 were rejected under 35 U.S.C. §103(a) as unpatentable over Herman in view of Inuiya (U.S. Patent No. 6,597,468).

In response to the provisional rejection of Claims 1, 7, 9 and 15 based on the non-statutory obvious-type double patenting over Claims 4 and 8 of the co-pending application 09/645,511, Applicants are hereby filing a Terminal Disclaimer in compliance with 37 C.F.R. §1.321(c) to address that rejection.

In response to the rejection of Claims 1, 3-10 and 12-24 under 35 U.S.C. §102(b) over Herman, Applicants respectfully request reconsideration of this rejection and traverse the rejection, as discussed next.

Briefly recapitulating, Claim 1 relates to an image processing method for correcting image distortions caused by oblique imaging in which an original image of an object on an object plane is taken from different oblique directions to obtain a plurality of partially overlapping images. The image processing method determines a feature point of one of the plurality of partially overlapping images corresponding to a common location of the original image, shared by the plurality of partially overlapping images, and determines a matched point of one of the other partially overlapping images corresponding to the feature point so that a direction of the object plane is calculated based on the feature point and the matched

point further one of the plurality of partially overlapping images is selected as a standard image whose image distortions are to be corrected, and a distortion-corrected image is generated on a projection plane by projecting the standard image onto the projection plane based on the direction of the object plan such that image distortions in the standard image are eliminated. Independent Claims 6, 7, 9, 15 and 16 disclose similar features in the context of an image processing method (Claim 6), an image processing apparatus (Claims 7 and 9), and a computer-readable storage medium (Claims 15 and 16).

Turning now to the applied reference, Herman discloses a method and apparatus for mosaic image construction that selects source images and aligns the source images.¹ However, Herman fails to teach Applicants' claimed "object plane." The outstanding Office Action states that Herman discloses in column 10, lines 32-36 that the surface or object plane is calculated or computed, and that "the corresponding points as matched measures are used to compute the surface or object plane."² Applicants respectfully disagree. Herman teaches that match measures, which are represented as surfaces for a small range of parameter values, are computed between pairs of overlapping frames.³ Further, Herman discloses that there are a collection of match surfaces for pairs of overlapping frames.⁴ Accordingly, a match surface computed between a pair of overlapping frames, as taught by Herman, *is not* an object plane of an original image, as claimed. Herman is not concerned about the object plane of an original image when calculating the match measures between overlapping frames.

Further, Herman does not teach or suggest "determining a feature point of one of the plurality of partially overlapping images corresponding to a common location of the original image, shared by the plurality of partially overlapping images, and determining a matched point of one of the other partially overlapping images corresponding to the feature point *so*

¹ See Herman in the Abstract.

² See outstanding Office Action on page 5, lines 12-18.

³ See Herman at column 10, lines 26-31.

⁴ See Herman at column 10, lines 31-33.

that a direction of the object plane is calculated based on the feature point and the matched point" (emphasis added), as recited in independent Claim 1. Herman teaches that the source images are warped to the estimated best match position, and that the match surfaces are computed again. Further, Herman discloses that this process may be iterated several times.⁵ Warping images several times to the estimated best match position, as taught by Herman, *is not* the calculation of a direction of the object plane based on a feature point, as claimed.

Accordingly, Herman does not disclose every feature of independent Claims 1, 6-7, 9 and 15-16, so that the rejection of Claims 1, 3-10 and 12-24 under 35 U.S.C. §102(b) is believed to be overcome. Applicants therefore request reconsideration of the rejection.

Further, Applicants respectfully submit that also the dependent claims recite features neither taught nor suggested in Herman. Herman does not teach the perspective projection matrix operation of dependent Claims 17-22. Herman teaches that affine transformation has to be performed in the color space by using a transformation matrix in order to correct (a) color-space differences, (b) differences of illumination, and (c) and haze that does not appear in the other images.⁶ A color space transformation, as taught by Herman, *is not* perspective projection matrix operation, as recited in dependent Claims 17-22.

In response to the rejection of Claims 2 and 11 under 35 U.S.C. §103(a), Applicants respectfully request reconsideration of this rejection and traverse the rejection, as discussed next.

Herman discloses a method of constructing an image mosaic including selecting source images, aligning the source images, selecting source segments, enhancing the images, and merging the images to a mosaic. Herman, however, fails to teach or suggest Applicants' claimed selection of one of the plurality of partially overlapping images as the standard based on a ratio of an area of an object region to an entire area of each image. In particular, and as

⁵ See Herman at column 10, lines 34-38 and in column 4, lines 44-57.

⁶ See Herman at column 15, lines 23-63.

acknowledged by the outstanding Office Action,⁷ Herman fails to teach or suggest the claimed ratio of an area of an object region to an entire area of each image.

The outstanding Office Action rejects Claims 2 and 11 based on the proposition that the Inuiya patent discloses the above feature⁸, and that it would have been obvious to modify Herman by importing this feature from Inuiya to arrive at Applicants' claimed invention. Applicants respectfully submit, however, that Inuiya fails to disclose the above feature related to the automatic selection of one of the plurality of partially overlapping image as the standard based on a *ratio of an area of an object region to an entire area of each image*, as next discussed.

The outstanding Office Action relies on Inuiya's text at column 7, lines 5-12. This passage of Inuiya recites that the camera detects an overlapped portion between the images of the present and preceding scenes using the image data functioning as a finder in the image pickup device, and releases the shutter of the camera when the ratio *of the overlapped portion to the entire area* becomes a particular value. Reading Inuiya, a person of ordinary skill in the art would understand that a ratio between the overlapped portion to the entire area of a present and preceding scene, as taught by Inuiya, *is not* a ratio of an object region to an entire area of each image. Inuiya's panoramic imaging mode is not interested in an object region of an image. Accordingly, a ratio of overlapping between a present and preceeding image used for panoramic photography in Inuiya⁹ *is not* a ratio of an object region to an entire area of each image to select one of a plurality of partially overlapping images, as would be required to meet Applicants' claimed feature. Therefore, even if the combination of Inuiya and Herman is assumed to be proper, the combination fails to teach every element of the claimed invention. Specifically, the combination fails to teach the claimed ratio of an

⁷ See outstanding Office Action at page 16, lines 21-23.

⁸ See outstanding Office Action from page 17, lines 14-18.

⁹ See Inuya, for example from column 6, line 57 to column 7, line 12 and in Figure 10

object region to an entire area of each image. Accordingly, Applicants respectfully traverse, and requests reconsideration of, the 35 U.S.C. §103(a) rejection based on Herman in view of Inuiya.¹⁰

Consequently, in view of the present Request for Reconsideration, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-24 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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¹⁰ See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."